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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,050	08/30/2001	Rand David Dannenberg	M00A226	8351

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EXAMINER	
CHANG, AUDREY Y	
ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/944,050	DANNENBERG, RAND DAVID	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *7-15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 16-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/17/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Remark

- This Office Action is in response to applicant's response filed on February 17, 2004 which has been entered into the file.
- The applicant has filed no amendment to the claims.
- Claims 7-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention group and species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 8.
- Claims 1-6 and 16-21 remain pending in this application.

Response to Amendment

1. The Declaration filed on February 17, 2004 under 37 CFR 1.131 is sufficient to overcome the Stachowiak (PN. 6,475,626) and Ogino et al (PN. 6,436,542) references.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-6, and 16, 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Hartig et al (PN. 5,344,718) in view of the patent issued to Hirai et al (PN. 6,115,180).

Hartig et al teaches a low-e *coated articles* and *method* for making the same wherein the coated articles comprises a *substrate* (G, Figure 4) and a *coating on the substrate*, (please see Figure 4, and column 8). The *coating* further comprises a *first dielectric layer* (211), a *metallic layer* (215) over the first dielectric layer and a *second dielectric layer* (221), over the metallic layer. With regard to claim 3, Hartig et al teaches that the *metallic* layer is *silver*. With regard to claims 4-6, Hartig et al further teaches to include *nickel-chromium* layer (213 and 219) as the *barrier layers* interposed between the first dielectric layer and the metallic layer and between the metallic layer and the second dielectric layer. The method steps concerning depositing these layers as claimed in claim 16 are met by the disclosure of this layer structure implicitly.

Hartig et al teaches that the first and second dielectric layer could be made of dielectric material such as silicon nitride but it does not teach explicitly that the dielectric layer is made by the *amorphous* titanium oxide with *additive* in an oxidization state as claimed. **Hirai et al** in the same field of endeavor teaches an optical multilayered film coating that is comprised of dielectric layers made of *amorphous titanium oxide with additive of silicon oxide*, (please see Figure 3 and column 7, line 25-40). Hirai et al teaches explicitly that with different percentage amount of silicon dioxide additive to the amorphous titanium dioxide, different refractive indices for the dielectric layer thin film may be achieved. One skilled in the art would recognize immediately that the refractive index of the thin film layer is a crucial factor for determining the optical characteristics (i.e. reflection, transmission and antireflection properties) of the thin film layer. These explicit teachings of the composite layer constitutions with different refractive indices as indicated in Figure 3 would benefit one skilled in the art to select the desired composite film for the particular need and design. Hirai et al further teaches that the silicon dioxide-titanium dioxide composite film has the advantage of with no polarization dependency which makes the thin film layer polarization-independent. It would then have been obvious to one skilled in the art to apply the teachings of Hirai et al to use the amorphous titanium oxide with additive of silicon oxide as the

dielectric layers for the benefit of making the low-e coated article with desired optical properties (including transmission, reflection and antireflection properties) and making the low-e coated article being polarization independent. Although these references do not identify the dielectric layers as "anti-reflection layers" the anti-reflection property is implicitly included in the layer material, (one skilled in the art would know the antireflection property is determined by the refractive index and layer thickness of the dielectric layer) and it is well known in the art to design the low-e coating with metallic layer interposed between two antireflection layers for the benefit of reducing unwanted reflection. It would then have been obvious to one skilled in the art to make the dielectric layers antireflective layers for the benefit of reducing unwanted reflection from the coated article.

With regard to claims 18-20, Hartig et al teaches that the layers are deposited by sputtering coat process, (please see column 1, lines 5-10). However it does not teach explicitly that it is done in an oxygen environment. **Hirai** et al teaches that the amorphous titanium oxide with silicon dioxide additive layer material in the multilayer structure is formed by sputtering process in oxygen environment with titanium oxide and the additive (i.e. silica) as the target, (please see column 7 lines 5-24). It would then have been obvious to one skilled in the art to apply the teachings of Hirai et al to modify the deposition method of Hartig et al for the benefit of manufacturing the coated article using sputtering process with sufficient oxygen content to form the desired amorphous oxide layer. Although it does not teach that the titanium and the additive as separate target such modification would have been obvious to one skilled in the art for the benefit of having a control of the sputtering process for the two materials separately.

4. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Lingle et al (PN. 6,514,620) in view of the patent issued to Hirai et al.

Lingle et al teaches a low-e matchable *coated articles* and *method* for making the same wherein the coated articles comprises a *substrate* (1) and a *coating on the substrate*, (please see Figure 1). The

coating further comprises a *first dielectric layer* (3), a *metallic layer* (7) over the first dielectric layer and a *second dielectric layer* (11), over the metallic layer. The method steps concerning depositing these layers as claimed in claim 16 are met by the disclosure of this layer structure implicitly.

Lingle et al teaches that the first and second dielectric layer could be made of dielectric material such as silicon nitride but it does not teach explicitly that the dielectric layer is made by the *amorphous* titanium oxide with *additive* in an oxidization state as claimed. **Hirai et al** in the same field of endeavor teaches an optical multilayered film coating that is comprised of dielectric layers made of *amorphous titanium oxide with additive of silicon oxide*, (please see Figure 3 and column 7, line 25-40). Hirai et al teaches explicitly that with different percentage amount of silicon dioxide additive to the amorphous titanium dioxide, different refractive indices for the dielectric layer thin film may be achieved. One skilled in the art would recognize immediately that the refractive index of the thin film layer is a crucial factor for determining the optical characteristics (i.e. reflection, transmission and antireflection properties) of the thin film layer. These explicit teachings of the composite layer constitutions with different refractive indices as indicated in Figure 3 would benefit one skilled in the art to select the desired composite film for the particular need and design. Hirai et al further teaches that the silicon dioxide-titanium dioxide composite film has the advantage of with no polarization dependency which makes the thin film layer polarization-independent. It would then have been obvious to one skilled in the art to apply the teachings of Hirai et al to use the amorphous titanium oxide with additive of silicon oxide as the dielectric layers for the benefit of making the low-e coated article with desired optical properties (including transmission, reflection and antireflection properties) and making the low-e coated article being polarization independent. Although these references do not identify the dielectric layers as "anti-reflection layers" the anti-reflection property is implicitly included in the layer material, (one skilled in the art would know the antireflection property is determined by the refractive index and layer thickness of the dielectric layer) and it is well known in the art to design the low-e coating with metallic layer

interposed between two antireflection layers for the benefit of reducing unwanted reflection. It would then have been obvious to one skilled in the art to make the dielectric layers antireflective layers for the benefit of reducing unwanted reflection from the coated article.

With claim 17, Lingle et al teaches that the coated article is heat-treated with temperature (about 500 Celsius) which is implicitly above the heat treatment of the substrate (normally about 150-200 Celsius) alone, (please see column 7).

Response to Arguments

5. Applicant's arguments with respect to claims 1-6 and 16-21 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Audrey Y. Chang
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.